WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2005SC13B

Title: Contaminant Transfer among Sediments, Water Column, and Atmosphere in Reservoirs

Project Type: Research

Focus Categories: Sediments, Hydrogeochemistry, Solute Transport

Keywords: sediments, geochemistry, hydrophobic contaminants, bioaccumulative toxic compounds, transport, chiral, PCBs

Start Date: 03/01/2005

End Date: 02/28/2006

Federal Funds: $20,580

Non-Federal Matching Funds: $41,763

Congressional District: 3rd

Principal Investigator:
Cindy M. Lee

Abstract

The project proposed here will improve our understanding of transport of contaminants from sediments to the water column and to the atmosphere in lakes and reservoirs. Understanding these transport mechanisms will allow better prediction of uptake of bioaccumulative contaminants by fish and enhance management decisions about fish advisories. Polychlorinated biphenyls (PCBs) in the sediment of Lake Hartwell, SC, will be considered as the model contaminants in this project. Lake Hartwell has had a fish advisory in place for PCB-contaminated fish since the late 1970s. Select PCB congeners that are chiral and hence possess special properties will serve as marker compounds that can be traced from sediment to water to air. Methods and techniques that we have developed in previous work will be used to determine selected chiral PCBs in sediment cores taken from Lake Hartwell and matched with Hartwell water and air samples obtained from EPA researchers from the National Risk Management Research Laboratory and the National Exposure Research Laboratory in Cincinnati, OH. Other researchers have used these techniques for studying transport of pesticides and PCBs between soil and air. However, these methods have not been applied to transport from sediments to water to air. Two masters students in environmental chemistry will be

trained during this project in state of the art methods for chiral analysis and interpretation of data.